

**WHAT IS CLAIMED IS:**

1. A pigment composition, comprising:  
at least one calcium carbonate chosen from rhombohedral calcium carbonate and ground calcium carbonate;  
at least one anionic dispersant present in an amount sufficient to overdisperse the at least one calcium carbonate; and  
at least one cationic polymer.
2. The pigment composition according to claim 1, wherein the at least one calcium carbonate comprises ground calcium carbonate.
3. The pigment composition according to claim 2, wherein the ground calcium carbonate has a median particle size of about 1.2  $\mu\text{m}$  or less.
4. The pigment composition according to claim 1, wherein the at least one anionic dispersant is chosen from a maleic anhydride copolymer, and a polyacrylate.
5. The pigment composition according to claim 4, wherein the at least one anionic dispersant is a maleic acrylic copolymer.
6. The pigment composition according to claim 1, wherein the at least one cationic polymer is chosen from polydiallyldimethylammonium chloride, copolymers of quaternary dimethylaminoethyl acrylate, and copolymers of quaternary dimethylaminoethyl methacrylate.
7. The pigment composition according to claim 1, wherein the at least one cationic polymer comprises a copolymer of epichlorohydrin and dimethylamine .
8. The pigment composition according to claim 1, wherein the at least one cationic polymer has a bulk viscosity of at least about 300 cps.
9. The pigment composition according to claim 1, wherein the at least one cationic polymer has a bulk viscosity of at least about 2,000 cps.
10. The pigment composition according to claim 1, wherein the at least one calcium carbonate has a surface area ranging from about 5  $\text{m}^2/\text{g}$  to about 600  $\text{m}^2/\text{g}$ .

11. The pigment composition according to claim 1, wherein the at least one calcium carbonate has a surface area ranging from about 5 m<sup>2</sup>/g to about 20 m<sup>2</sup>/g.

12. The pigment composition according to claim 1, wherein the at least one anionic dispersant comprises a maleic acrylic copolymer and the at least one cationic polymer is polydiallyldimethylammonium chloride.

13. The pigment composition according to claim 1, wherein the at least one anionic dispersant is a maleic acrylic copolymer and the at least one cationic polymer comprises a copolymer of epichlorohydrin and dimethylamine.

14. The pigment composition according to claim 1, wherein the at least one calcium carbonate comprises rhombohedral calcium carbonate.

15. The pigment composition according to claim 14, wherein the rhombohedral calcium carbonate has a median particle size of about 0.5  $\mu$ m or less.

16. A method of preparing a pigment, comprising:  
combining at least one anionic dispersant with at least one calcium carbonate chosen from rhombohedral calcium carbonate and ground calcium carbonate, the at least one anionic dispersant being present in an amount effective to overdisperse the at least one calcium carbonate; and  
combining at least one cationic polymer with the dispersed calcium carbonate.

17. The method according to claim 16, wherein the at least one calcium carbonate comprises rhombohedral calcium carbonate having a median particle size of about 0.5  $\mu$ m or less.

18. The method according to claim 17, wherein the at least one rhombohedral calcium carbonate has a median particle size of about 0.4  $\mu$ m or less.

19. The method according to claim 16, wherein the dispersed carbonate is combined with the at least one cationic polymer, the at least one cationic polymer being present in an amount of at least about 2 weight percent, relative to the weight of the at least one calcium carbonate.

20. The method according to claim 16, wherein the dispersed carbonate is combined with the at least one cationic polymer, the at least one cationic polymer being present in an amount of at least about 3 weight percent, relative to the weight of the at least one calcium carbonate.

21. The method according to claim 16, wherein the additional amount to achieve over dispersion of the at least one anionic dispersant ranges from about 0.25 times to about 10 times the amount sufficient to achieve a minimum viscosity.

22. The method according to claim 16, wherein the amount of the at least one anionic dispersant added ranges from about 0.1% to about 5% by weight relative to the weight of the at least one calcium carbonate.

23. The method according to claim 16, wherein the amount of the at least one anionic dispersant added ranges from about 0.5% to about 5% by weight relative to the weight of the at least one calcium carbonate.

24. The method according to claim 16, wherein the amount of the at least one anionic dispersant added ranges from about 1% to about 5% by weight relative to the weight of the calcium carbonate.

25. The method according to claim 16, wherein the at least one cationic polymer has a bulk viscosity of at least about 300 cps.

26. The method according to claim 16, wherein the at least one calcium carbonate has a surface area ranging from about 5 m<sup>2</sup>/g to about 600 m<sup>2</sup>/g.

27. The method according to claim 16, wherein the at least one calcium carbonate has a surface area ranging from about 5 m<sup>2</sup>/g to about 20 m<sup>2</sup>/g.

28. The method according to claim 16, wherein the at least one anionic dispersant is chosen from a maleic acrylic copolymer, a maleic anhydride copolymer, and a polyacrylate.

29. The method according to claim 16, wherein the at least one cationic polymer comprises a cationic quaternary ammonium polymer.

30. The method according to claim 16, wherein the at least one cationic polymer is chosen from a copolymer of

epichlorohydrin/dimethylamine, polydiallyldimethylammonium chloride, copolymers of quaternary dimethylaminoethyl acrylate, and copolymers of quaternary dimethylaminoethyl methacrylate.

31. The method according to claim 16, wherein said pigment has a solids concentration ranging from about 50% to about 65% solids.

32. The method according to claim 16, wherein said pigment has a solids concentration ranging from about 55% to about 60% solids.

33. A paper coating composition, comprising:

at least one calcium carbonate chosen from rhombohedral calcium carbonate and ground calcium carbonate;

at least one anionic dispersant present in an amount effective to overdisperse the at least one calcium carbonate;

at least one cationic polymer; and

at least one binder.

34. The paper coating composition according to claim 33, wherein the at least one calcium carbonate comprises rhombohedral calcium carbonate having a median particle size of about 0.5  $\mu\text{m}$  or less.

35. The paper coating composition according to claim 33, wherein the at least one anionic dispersant is chosen from a maleic acrylic copolymer, a maleic anhydride copolymer, and a polyacrylate.

36. The paper coating composition according to claim 33, wherein the at least one cationic polymer comprises a cationic quaternary ammonium polymer.

37. The paper coating composition according to claim 33, wherein the at least one cationic polymer is chosen from copolymers of epichlorohydrin/dimethylamine, polydiallyldimethylammonium chloride, copolymers of quaternary dimethylaminoethyl acrylate, and copolymers of quaternary dimethylaminoethyl methacrylate.

38. The paper coating composition according to claim 33, wherein the at least one anionic dispersant is chosen from a maleic acrylic copolymer, a maleic anhydride copolymer, and a polyacrylate; and the cationic polymer is chosen from cationic quaternary ammonium polymers.

39. The paper coating composition according to claim 33, wherein the at least one calcium carbonate is present in the composition in an amount ranging from about 20% to about 70% by weight relative to the total weight of the composition.

40. The paper coating composition according to claim 33, wherein ink printed on a coated paper comprising the paper coating composition has a cyan print density of at least about 0.75.

41. The paper coating composition according to claim 33, wherein ink printed on a coated paper comprising the paper coating composition has a magenta print density of at least about 0.5.

42. The paper coating composition according to claim 33, wherein ink printed on a coated paper comprising the paper coating composition has a wicking value of at least about 0.5.

43. The paper coating composition according to claim 33, wherein ink printed on a coated paper comprising the paper coating composition has a wicking value of at least about 1.

44. A coated paper, comprising:  
a fibrous substrate;  
at least one calcium carbonate chosen from rhombohedral calcium carbonate and ground calcium carbonate;  
at least one anionic dispersant present in an amount effective to overdisperse the at least one calcium carbonate;  
at least one cationic polymer in an amount of at least about 2 weight percent, relative to the weight of the calcium carbonate; and  
at least one binder.

45. The coated paper according to claim 44, wherein the at least one calcium carbonate comprises rhombohedral calcium carbonate having a median particle size of about 0.5  $\mu\text{m}$  or less.

46. The coated paper according to claim 44, wherein ink printed on the coated paper has a cyan print density of at least about 0.75.

47. The coated paper according to claim 44, wherein ink printed on the coated paper has a magenta print density of at least about 0.5.

48. The coated paper according to claim 44, wherein ink printed on the coated paper has a wicking value of at least about 0.5.

49. The coated paper according to claim 44, wherein ink printed on the coated paper has a wicking value of at least about 1.

50. A method of preparing a pigment, comprising:

(a) adding substantially simultaneously to a vessel, at least one anionically dispersed carbonate slurry and at least one cationic polymer, to form a cationic carbonate slurry; and

(b) removing the cationic carbonate slurry from the vessel at a rate equal to the sum of the rate of the cationic polymer and dispersed carbonate slurry addition in (a).

51. The method according to claim 50, wherein the adding in (a) occurs at a rate ranging from about 1% to about 25% of the vessel slurry volume per minute.

52. The method according to claim 50, wherein the removing in (b) occurs at a rate ranging from about 2% to about 12% of the vessel slurry volume per minute.

53. The method according to claim 52, wherein the removing in (b) occurs at a rate ranging from about 3% to about 10% of the vessel slurry volume per minute.

54. The method according to claim 50, wherein the carbonate is calcium carbonate.

55. The method according to claim 54, wherein the calcium carbonate is chosen from rhombohedral calcium carbonate and ground calcium carbonate.

56. The method according to claim 55, wherein the carbonate comprises rhombohedral calcium carbonate having a median particle size of about 0.5  $\mu\text{m}$  or less.

57. A pigment composition, comprising:

at least one rhombohedral calcium carbonate;

at least one anionic dispersant; and

at least one cationic polymer.

58. The pigment composition according to claim 57, wherein the at least one rhombohedral calcium carbonate has a median particle size of about 0.5  $\mu\text{m}$  or less.

59. The pigment composition according to claim 57, wherein the at least one rhombohedral calcium carbonate has a median particle size of about 0.4  $\mu\text{m}$  or less.

60. The pigment composition according to claim 57, wherein the at least one rhombohedral calcium carbonate has a median particle size of about 0.3  $\mu\text{m}$  or less.

61. The pigment composition according to claim 57, wherein the at least one cationic polymer is present in the composition in an amount of at least about 2 percent by weight, relative to the weight of calcium carbonate.

62. The pigment composition according to claim 61, wherein the at least one cationic polymer is present in the composition in an amount of at least about 3 percent by weight, relative to the weight of calcium carbonate.

63. The pigment composition according to claim 57, wherein the at least one anionic dispersant is present in the composition in an amount ranging from about 0.1 % to about 5% by weight, relative to the weight of calcium carbonate.

64. The pigment composition according to claim 57, wherein the at least one anionic dispersant is present in the composition in an amount of at least about 0.5% by weight, relative to the weight of calcium carbonate.

65. The pigment composition according to claim 57, wherein the at least one anionic dispersant is present in the composition in an amount of at least about 1% by weight, relative to the weight of calcium carbonate.

66. The pigment composition according to claim 57, wherein the at least one anionic dispersant is chosen from a maleic acrylic copolymer, a maleic anhydride copolymer, and a polyacrylate.

67. The pigment composition according to claim 57, wherein the at least one cationic polymer comprises a cationic quaternary ammonium polymer.

68. The pigment composition according to claim 57, wherein the at least one cationic polymer is chosen from copolymers of epichlorohydrin/dimethylamine, polydiallyldimethylammonium chloride, copolymers of quaternary dimethylaminoethyl acrylate, and copolymers of quaternary dimethylaminoethyl methacrylate.

69. The pigment composition according to claim 57, wherein the at least one anionic dispersant is chosen from a maleic acrylic copolymer, a maleic anhydride copolymer, and a polyacrylate; and the cationic polymer is chosen from cationic quaternary ammonium polymers.

70. The pigment composition according to claim 57, wherein said pigment composition has a solids concentration ranging from about 40% to about 65% solids.

71. The pigment composition according to claim 57, wherein said pigment composition has a solids concentration ranging from about 50% to about 65% solids.

72. The pigment composition according to claim 57, wherein said pigment composition has a solids concentration ranging from about 55% to about 60% solids.

73. The pigment composition according to claim 57, wherein the at least one rhombohedral calcium carbonate has a surface area ranging from about 5 m<sup>2</sup>/g to about 600 m<sup>2</sup>/g.

74. The pigment composition according to claim 57, wherein the at least one rhombohedral calcium carbonate has a surface area ranging from about 5 m<sup>2</sup>/g to about 20 m<sup>2</sup>/g.